

REMARKS

Claims 1, 3, 5, 8, 9, 11-13, 18 and 21-31 are now in the application. Claims 21-31 are newly added. The recent telephonic interview so courteously granted by Examiner Nickolas Harm and Primary Examiner Mark Osele is hereby noted with appreciation. Claims 1, 11 and 12 have been amended to recite that the adhesive or interlayer (see claim 12) comprises “at least one member selected from the group consisting of polyvinyl acetal resins and ethylene-vinyl acetate resins”, disclosed at paragraph [0031] of the published application. This was one of the possible amendments mentioned by the undersigned during telephone interview. Claim 3, 5, 8 and 18 have been amended to recite “the at least one substance” in place term “normal temperature and normal pressure” for purposes of clarification and not to limit its scope. Basis for newly presented claims 21, 22, 26, 27 and 31 can be found at least in the original claims. Basis for newly presented claims 23-25 can be found in paragraph [0055]. Basis for newly presented claims 28-30 can be found at least in the examples in the specification. The amendments to the claims and newly presented claims do not introduce any new matter.

The rejections of claims 3, 5, 8 and 8 under 35 USC 112, second paragraph as being indefinite have been overcome by the amendments to these claims. In particular, claims 3, 5, 8 and 18 no longer recite “normal temperature and normal pressure”.

Claims 1, 3, 5, 8, 9 and 11-12 were rejected under 35 USC 103(a) as being unpatentable over US Patent 5,501,761 to Evans et al. (hereinafter also referred to as “Evans”) in view of the JP -2002-343760 to Ono. The cited references not render obvious the claims, as now amended.

An important feature of the present invention is keeping the adherend together with a fluid which is a gas at a normal temperature and normal pressure in a high pressure condition and then releasing the pressure. With this method, the adherend can be completely separated without an adhesive deposit or the like. A fluid in the high pressure state, especially a fluid in the supercritical state or subcritical state can readily penetrate the adhesive sticking the adherend. It is believed that if the pressure is released in the state, the volume of the fluid that penetrates the adhesive as described is changed in the adhesive and following the volume alteration, stress is

caused between the adherend and the adhesive and owing to the stress, the separation is carried out.

For example, a laminate glass, which is obtained by sandwiching an adhesive or an intermediate film for the laminate glass, which adhesive is made of a thermoplastic resin sheet such as a polyvinyl acetal (e.g. polyvinyl butyral) resin sheet between glass plates and bonding them together, has been used widely as glass for vehicles such as automobiles and aircrafts or for window glass of buildings. With respect to such a laminate glass, it has been necessary to reuse the glass and the intermediate film for laminate glass by disassembling the used laminate glass and then recycling the glass and intermediate film. Please see Example 1 of the present specification. In Example 1, the laminated glass was separated into the glass and the interlayer film for the laminate glass. According to the method of the invention, the laminated glass can be separated into the glass and either the adhesive or the interlayer film for the laminate glass. The glass and interlayer film for the laminate glass that are obtained are completely separated from each other, so that they can be made reusable by recycling them as they are. Especially, in the case a single sheet of the adherend is used as it is, the recovered glass and the interlayer film for laminate glass can be made reusable as they are obtained from the separation process according to the present invention.

In the step of sealing the adherend and the fluid which is a gas at a normal temperature and normal pressure in the pressure resistant container, "water" is added into the pressure resistant container. Use of water in combination makes separation of the adherend easier and more reliable. All of the Examples in the present application use "water".

Evans suggests a method for removing a conformal coating from a circuit board. The method comprises the steps of locally thinning the coating, and then subjecting the coated circuit board in a processing chamber to supercritical carbon dioxide. The method of Evans is to dissolve a coating material remaining at the bottom of an incision with a supercritical carbon dioxide (please see column 4, lines 47-58). However, Evans fails to disclose the use of "water" with a supercritical carbon dioxide.

In addition, the only coatings mentioned in Evans are parylene, urethane and silicone resins, which differ significantly from the resins now recited in the present claims.

Ono does not overcome the above discussed deficiencies of Evans with respect to rendering obvious the present invention. Ono suggests a method removing organic polymer substances adhering or deposited on objects to be washed by spraying water or a polar solvent.

Comparing the present invention and Evans, illustrates that the mechanics of separation differ significantly from each other. In the present invention, separation occurs due to the volume change of the fluid that penetrates the adhesive. The adhesive itself is not dissolved in the fluid. To clarify this feature, the independent claims, as discussed above, have been amended to recite that the adhesive comprises “at least one member selected from the group consisting of polyvinyl acetal resins and ethylene-vinyl acetate resins”, preferred polymers employed according to the present invention. Thus the adhesive itself can be recovered and can be made reusable by recycling. On the other hand, in the method of Evans, separation occurs due to dissolving a coating material (adhesive) by supercritical carbon dioxide. Therefore, it would not be obvious to employ an adhesive as now recited in the claims, which polymers are not dissolved by supercritical carbon dioxide or any of the claimed solvents.

All of the teachings in the art must be considered including those that teach away. Please see *In re Mercier* 185 USPQ 774 (CCPA, 1975). Moreover, where, as here, the teachings of the prior art would discourage persons skilled in the art from doing what applicant teaches and claims, the art establishes the “very antithesis of obviousness”. Please see, *In re Rosenberger*, 156 USPQ 24 (CCPA, 1967) and *In re Buehler*, 185 USPQ 781 (CCPA, 1975).

In addition, claims 11 and 12 and claims dependent thereon are patentable over the cited references, since Evans which requires making incisions would not be applicable to laminates where the adhesive or interlayer would not be accessible to have incisions made therein. Also, the spraying technique required by Ono would not be effective for laminates as recited in these claims. As discussed in the present specification at paragraph [0013], water or a polar solvent in supercritical or subcritical state cannot be sprayed directly to organic polymer substances formed thin between two pieces of an object to be washed.

Claim 13 was rejected under 35 USC 103(a) as being unpatentable over US Patent 5,501,761 to Evans et al. in view of US Patent 6,383,647 to Shohi et al. The cited art does not render obvious claim 13. Shohi et al. do not overcome the above discussed deficiencies of Evans. Shohi et al were relied upon for a disclosure of heating laminated glass with an interlayer film at a temperature at 150 degrees Celsius, which according to the office action is equivalent to firing the glass and interlayer. Therefore, claim 13 is patentable for at least those reasons as to why claim 12 is patentable.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

In the event the Examiner believes an interview might serve in any way to advance the prosecution of this application, the undersigned is available at the telephone number noted below.

Please charge any fees due with this paper to our Deposit Account No. 22-0185, under Order No. 21581-00458-US from which the undersigned is authorized to draw.

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Respectfully submitted,

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